Wallis Sands State Park, Rye

BEACH WATER QUALITY REPORT
SUMMER 2004

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Healthy Swimming Through Clean Water

NHDES Beach Program (603) 271-3503

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

BACKGROUND

The New Hampshire Department of Environmental Services (NHDES) has operated its Public Beach Inspection Program, or Beach Program, for over twenty years. Coastal beach monitoring began in 1989 and has continued through the present. NHDES recognizes the threat to public health at public beaches and continues to monitor public beaches throughout the state for the presence of pathogenic organisms. Coastal beaches are monitored for the presence of the fecal bacteria Enterococci. These fecal bacteria are present in the intestines of warm-blooded animals including humans. Fecal bacteria, when present in high concentrations and ingested, can commonly cause gastrointestinal illnesses such as nausea, vomiting and diarrhea. They are also known as indicator organisms, meaning their presence in water may indicate the presence of other potentially pathogenic organisms.

In October of 2000, the United States Environmental Protection Agency (EPA) signed into law the Beaches Environmental Assessment and Coastal Health (BEACH) Act. The BEACH Act is an amendment to the Clean Water Act that authorizes the EPA to award grants to eligible states. The purpose of the BEACH Act is to reduce the risk of disease to users of the nation's recreational waters. BEACH Act grants provide support for development and implementation of monitoring and notification programs that help protect the public from exposure to pathogenic microorganisms in coastal recreation waters.

NHDES received grant funding in 2002 to develop and implement a beach monitoring and notification program consistent with EPA's performance criteria requirements published in the *National Beach Guidance and Required Performance Criteria for Grants* document (www.epa.gov/waterscience/beaches/grants). NHDES has successfully met all requirements and continues to expand the monitoring and notification program. In 2002, only 9 coastal beaches were monitored, in 2003 fifteen coastal beaches and in 2004 sixteen coastal beach were monitored on a routine basis.

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Beach Description

Wallis Sands State Park is owned and maintained by the New Hampshire Division of Parks and Recreation, State Parks Bureau.

Wallis Sands State Park is a sandy beach whose total length is 661 feet. The beach is frequently used by residents, vacationers and school or camp groups for various recreational activities. There are three access points to the beach area from the parking lot. Lifeguards are present throughout the summer and toilet and shower facilities are available.

Waterfowl are not frequently observed at the beach. Dogs are restricted from state-owned beaches.

Below is a brief description of the sampling stations at Wallis Sands State Park, Rye. The stations are pictured in Figure 1.

- For all stations, parking is available for a small fee at the Wallis Sands State Park main parking lot on Route 1A.
- The left station is located directly in front of the northern beach entrance.
- The center station is located directly in front of the center main beach entrance and lifeguard station.
- The right station is located directly in front of the southern beach entrance by the rock wall that separates Wallis Sands Beach from Pirates Cove Beach.

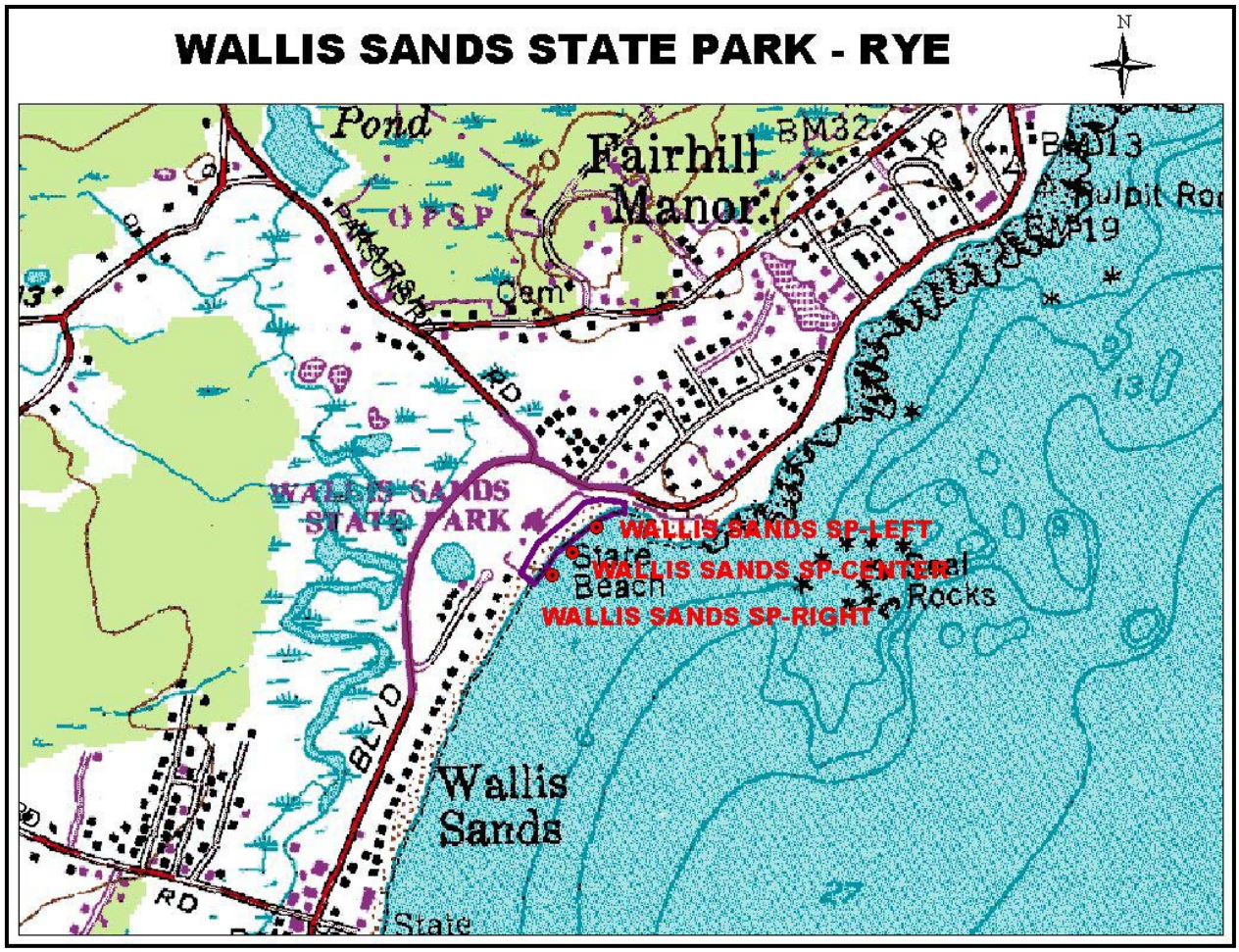

Figure 1. Map of Wallis Sands Beach

Tier Status and Sampling Frequency

The Beach Program developed a risk-based beach evaluation process and tiered monitoring approach and implemented this approach during the 2003 beach season. Beach evaluations are conducted annually to determine potential health threats to the public. Evaluations are based on several criteria in three main categories: beach history, microbial pathogen sources, and beach use. Based on these criteria, beaches are assigned either a Tier I or Tier II status. Tier I are high priority beaches that have an increased potential to affect public health while Tier II are low priority beaches that have less potential to affect public health. Beach sample frequency is based on the Tier statuses; Tier I beaches are sampled weekly and Tier II beaches are sampled every other week.

Wallis Sands State Park was categorized as a Tier I beach based on the Beach Program's Risk-Based Evaluation ranking system. This ranking indicates that the beach is frequently used by the public and there are potential pollution sources present that may negatively affect public health.

The Wallis Sands Tier I ranking has remained in place since the ranking system was implemented.

Water Quality

Beaches are monitored to ensure compliance with State Water Quality Standards. Marine waters are analyzed for the presence of the fecal bacteria Enterococci. Enterococci are known as indicator organisms, meaning their presence may indicate the presence of pathogenic bacteria. The state standard for Enterococci at public beaches is 104 counts/100 mL in one sample, or a geometric mean of 35 counts/100 mL in three samples collected over sixty days. Standard exceedances require the issuance and posting of a beach advisory. Beach advisories remain in effect until subsequent beach sampling indicates safe water quality conditions.

The number of samples collected at each beach is determined by the beach length. Beaches less than 100 feet in length are sampled at left and right locations 1/3 of the distance from either end of the beach. Beaches greater than 100 feet in length are bracketed into thirds and sampled at left, center and right locations. Routine sample collection may be enhanced by sampling known or suspected pollution sources to the beach area. Also, storm event sampling may be conducted at beaches where wet-weather events are expected to affect beach water quality.

The 2004 sampling season began June 1st. June was cooler and drier than normal, July was cooler and wetter than normal, while August was warmer and wetter than normal. The sampling season encompassed 108 days, of which precipitation was recorded on 42 days (based on Seabrook WWTF recorded precipitation). Twenty beach days (normal beach hours are considered 9:00 a.m. to 5:00 p.m.) were directly affected by precipitation.

Wallis Sands State Park Beach was sampled once per week from June 1st through Labor Day. Three samples were collected at left, center and right stations (Figure 1). There were a total of 15 routine inspections performed and 45 samples collected in 2004.

Table 1 includes the Enterococci data from each sampling event in 2004. Overall, the Enterococci levels were very low. No advisories were issued for Wallis Sands State Beach in 2004. Enterococci levels were slightly elevated on August 2, 2004 at the left and right stations. There is no direct evidence as to what may have caused the elevated Enterococci levels. Beach inspection data indicate that both areas were laden with seaweed and there were around 100 bathers in the water. Seaweed can harbor bacteria and when disturbed the bacteria may be released into the water column. Also, bathers may disturb sediment while swimming. Bacteria can concentrate in the sediment and become suspended in the water when the sediment is disturbed. These two factors are likely what caused the elevated Enterococci levels.

Table 1. Wallis Sands State Park Beach Enterococci Data 2004

Sample Date	Station Name	Results (counts per 100 mL)
05/11/2004	Wallis Sands SP – Left	<10
	Wallis Sands SP – Center	<10
	Wallis Sands SP – Right	10
06/02/2004	Wallis Sands SP – Left	30
	Wallis Sands SP – Center	20
	Wallis Sands SP – Right	30
06/08/2004	Wallis Sands SP – Left	10
	Wallis Sands SP – Center	20
	Wallis Sands SP – Right	<10
06/16/2004	Wallis Sands SP – Left	<10
	Wallis Sands SP – Center	<5
	Wallis Sands SP – Right	10
06/22/2004	Wallis Sands SP – Left	<10
	Wallis Sands SP – Center	10
	Wallis Sands SP – Right	5
06/30/2004	Wallis Sands SP – Left	<10
	Wallis Sands SP – Center	10
	Wallis Sands SP – Right	10
07/06/2004	Wallis Sands SP – Left	20
	Wallis Sands SP – Center	<10
	Wallis Sands SP – Right	20
07/12/2004	Wallis Sands SP – Left	<5
	Wallis Sands SP – Center	<10
	Wallis Sands SP – Right	20
07/20/2004	Wallis Sands SP – Left	<10
	Wallis Sands SP – Center	10
	Wallis Sands SP – Right	<10
07/28/2004	Wallis Sands SP – Left	<10
	Wallis Sands SP – Center	<10
	Wallis Sands SP – Right	10
08/02/2004	Wallis Sands SP – Left	60
	Wallis Sands SP – Center	10
	Wallis Sands SP – Right	90
08/11/2004	Wallis Sands SP – Left	<5
	Wallis Sands SP – Center	<10
	Wallis Sands SP – Right	<10
08/16/2004	Wallis Sands SP – Left	<10
	Wallis Sands SP – Center	<10
	Wallis Sands SP – Right	<10
08/24/2004	Wallis Sands SP – Left	<5
	Wallis Sands SP – Center	<10
	Wallis Sands SP – Right	<10
08/31/2004	Wallis Sands SP – Left	20
	Wallis Sands SP – Center	10
	Wallis Sands SP – Right	<10

Figure 2 depicts the Enterococci data in relation to the state standard for coastal beaches.

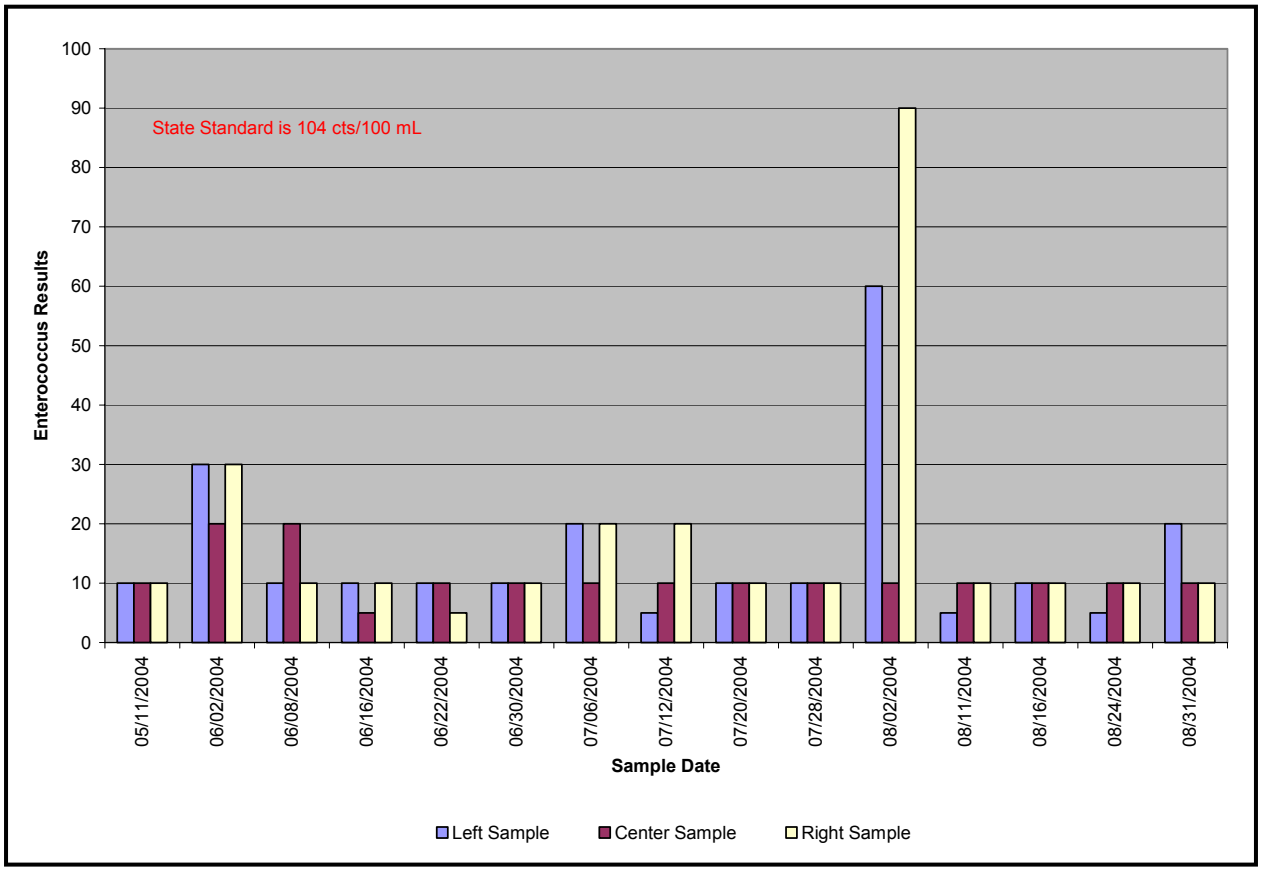

Figure 2. Wallis Sands State Park Beach Enterococci Data 2004

The Beach Program staff analyzed whether a relationship exists between elevated Enterococci levels and precipitation at Wallis Sands Beach. Analyses of the data indicate no direct correlation. DES will continue to monitor precipitation data and Enterococci levels. Precipitation often causes elevated bacteria levels due to runoff in the watershed.

Areas of Concern

Wallis Sands State Park is a very popular beach for residents and especially children's groups. The beach experiences a high concentration of beach users in a rather small section of New Hampshire's coast. There is a rock jetty on the southern end that separates the beach from Pirates Cove Beach and the land juts out at the northern end of the beach, providing a sheltered beach area. This could prevent the area from receiving regular flushing with the open ocean water which could in turn affect bacteria concentrations. However, bacteria concentrations to date do not appear to be affected by the sheltered conditions.

Wallis Sands State Park operates its own waste water treatment system that discharges 180 feet seaward of the high tide line at the northern end of the beach. The system is only active during the summer months when park facilities are open to the public. The waste water is exposed to UV radiation prior to discharge and does not appear to affect beach water quality.

Thoughts for the Future

- The State Parks Division, local businesses, or school groups should consider joining NHDES' Adopt-a-Beach Program. The program would consist of beach clean-ups and water quality monitoring. DES would conduct training sessions and participate in education and outreach activities for the community. If you are interested, please contact Sara Sumner at 603-271-8803 or ssumner@des.state.nh.us.